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THE INFLUENCE OF THE MCKENZIE METHOD ON THE QUALITY OF LIFE OF PATIENTS WITH LUMBOSACRAL SPINE AILMENTS

WPŁYW METODY MCKENZIEGO NA JAKOŚĆ ŻYCIA PACJENTÓW Z DOLEGLIWOŚCIAMI BÓLOWYMI KREGOSŁUPA W ODCINKU LĘDŹWIOWO-KRZYŻOWYM

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S u m m a r y

Introduction. Ailments of the lumbosacral spine are a more and more frequent problem of the modern society. They very often hinder everyday functioning or even make it harder and have a negative influence on the quality of patients' lives. Contemporary physical therapy applies many methods and forms of therapy to deal with spinal ailments. One of the most renowned types is the method of Mechanical Diagnosis and Therapy created by Robin McKenzie.

The aim of this thesis is to evaluate the McKenzie method's influence on the quality of life of patients with lumbosacral spine ailments.

Materials and methods. The studies were conducted in the group of 50 patients with lumbosacral spine ailments. The patients were divided into two groups: treatment group (25 patients) and control group (25 patients). The treatment group was composed of patients treated with the McKenzie method for 3 weeks, whereas the control group included patients treated with kinesiotherapy and physical therapy according to the recommendations of the referring physician. The Oswestry Disability Index was used in order

to assess the therapy results before and directly after the rehabilitation of every patient.

Results. The average mean for the treatment group before the therapy obtained on the basis of the Oswestry Disability Index, was 54.96 (± 12.677) and after the therapy was 10.800 (± 9.713). The minimal value before the therapy was 32 and after the therapy was 0. The maximal value before the therapy was 78 and after the therapy - 46. The treatment using the McKenzie method had a significant influence ($p < 0.05$) on the improvement of the quality of life of patients with lumbosacral spine ailments. After the therapy, the patients from the treatment group obtained relevantly lower results in the Oswestry Disability Index than the patients from the control group.

C o n c l u s i o n s :

1. The McKenzie method therapy significantly improves the quality of life of patients with lumbosacral spine ailments.

2. The McKenzie method therapy is a more effective form of therapy when it comes to the improvement of the quality patients' life with lumbosacral spine ailments than kinesiotherapy and physical therapy.

Streszczenie

Wstęp. Dolegliwości bólowe kręgosłupa lędźwiowo-krzyżowego stają się coraz bardziej powszechnym problemem współczesnego społeczeństwa. Często utrudniają lub nawet uniemożliwiają prawidłowe funkcjonowanie człowieka oraz wpływają na obniżenie jakości życia pacjentów. Współczesna fizjoterapia wykorzystuje wiele metod i form terapii dolegliwości bólowych kręgosłupa. Jedną z nich jest metoda mechanicznego diagnozowania i terapii opracowana przez Robina McKenziego.

Celem pracy jest ocena wpływu metody McKenziego na jakość życia pacjentów z dolegliwościami bólowymi kręgosłupa lędźwiowo-krzyżowego.

Materiał i metody. Badania zostały przeprowadzone na grupie 50 pacjentów z dolegliwościami bólowymi kręgosłupa lędźwiowo-krzyżowego. Pacjenci zostali podzieleni na dwie grupy: badawczą - 25 osób i kontrolną - 25 osób. Grupa badawcza była objęta 3 tygodniową terapią wg metody McKenziego. Grupę kontrolną stanowili pacjenci leczeni kinezyterapią i fizykoterapią. Przed rozpoczęciem terapii i bezpośrednio po jej zakończeniu u pacjentów w celu oceny efektów terapii zastosowano kwestionariusz Oswestry.

Key words: the McKenzie method, the quality of life, spinal ailments

Słowa kluczowe: metoda McKenzie, jakość życia, dolegliwości bólowe kręgosłupa

Wyniki. Średnia wartość uzyskana dla grupy badawczej w kwestionariuszu Oswestry przed terapią to 54,96 ($\pm 12,677$), zaś po terapii 10,800 ($\pm 9,713$). Wartość minimalna przed terapią wynosiła 32, a po terapii 0, wartość maksymalna uzyskana przed leczeniem to 78, a po 46. Leczenie z wykorzystaniem metody McKenziego wpłynęło istotnie ($p < 0,05$) na poprawę jakości życia osób z dolegliwościami bólowymi kręgosłupa lędźwiowo-krzyżowego. Po terapii osoby z grupy badawczej uzyskiwały wyniki w kwestionariuszu Oswestry istotnie niższe niż osoby z grupy kontrolnej.

Wnioski:

1. Terapia metodą McKenziego poprawia istotnie jakość życia pacjentów z dolegliwościami bólowymi odcinka lędźwiowo-krzyżowego kręgosłupa.

2. Terapia metodą McKenziego jest skuteczniejszą formą terapii w aspekcie poprawy jakości życia pacjentów z dolegliwościami bólowymi kręgosłupa w odcinku lędźwiowo-krzyżowym niż kinezyterapia i fizykoterapia.

INTRODUCTION

Spinal ailments are a more and more frequent problem of the modern society. They very often hinder everyday functioning or even make it harder and have a negative influence on the quality of patients' lives [1,2,3]. Many authors claim that the main reason for the ailments of the lower part of the spine is associated with the dynamic development of the civilization causing changes in people's lifestyle [4,13]. The subject connected with the lumbosacral spine ailments arouses interest and motivates many scientists. Contemporary medicine and physiotherapy dealing with spinal ailments apply many methods and forms of therapy such as kinesiotherapy, physical therapy, massage and other specialist methods. The McKenzie method undoubtedly deserves special attention [5,6,7].

THE MCKENZIE METHOD

The McKenzie method was introduced by Robin McKenzie, a physiotherapist from New Zealand. It is a very effective treatment system created for the mechanical testing, therapy and prevention of spinal ailments that puts emphasis on the active participation of patients in the rehabilitation process.

It is based on the analysis of pain patterns and the factors which influence the occurrence of pain. The

treatment program by McKenzie consists of very thorough interview and physical examination which is conducted in accordance with the own protocol. Dynamic and static testing and repeated motor exams are characteristic elements of a physical examination. Robin McKenzie divided the ailments into three mechanical syndromes (derangement, dysfunction and postural) and suggested therapeutic procedures and treatment strategies. [8,9,10,11]

THE AIM OF THE THESIS

The aim of this thesis is to evaluate the McKenzie method influence on the quality of life of patients with lumbosacral spine ailments.

MATERIALS AND METHODS

The studies were conducted in the group of 50 patients with lumbosacral spine ailments, treated in local health center in Solec Kujawski. Patients were divided into two groups. Group I - treatment group was composed of patients treated with the McKenzie method for 3 weeks. Before being treated, the patient underwent an examination conducted in accordance with the Robin McKenzie protocol. Then, each patient received an individual set of exercises and was encouraged to do these exercises systematically. Group

II - control group was composed of patients with lumbosacral spine ailments. The patients from this group were treated with kinesiotherapy (general conditioning exercises) and physical therapy (magnetotherapy, electrotherapy and phototherapy) during a course of ten treatments. The Oswestry Disability Index (ODI) was applied before and directly after the rehabilitation and assessed the following: exacerbation of pain, self-care activities, lifting, walking, sitting, standing, sleeping, social life, sexual activity and travelling. Each patient may receive from 0 to 5 points for an answer in each out of ten sections. The interpretation of the results: points from all sections must be added and substituted in the following formula: sum of the points/ 50 x 100 = level of disability.

Table I. *The interpretation of the results obtained on the basis of the Oswestry Disability Index*

Tabela I. *Interpretacja wyników kwestionariusza Oswestry*

0-20 %	minimal level of disability
21-40%	moderate level of disability
41-60%	severe level of disability
61-80%	permanent disability
81-100%	Disablement

All calculations and figures were made using SPSS Statistics Program.

RESULTS

Before the therapy in the treatment group 48% of patients were severely disabled, 32% were permanently disabled and 20% were moderately disabled, according to the Oswestry Disability Index. After the therapy with the McKenzie method, 92% of patients were minimally disabled, 4% were moderately disabled and 4% were severely disabled.

Table II. *The influence of the application of the McKenzie method on the results obtained in the Oswestry Disability Index*

Tabela II. *Wpływ leczenia metodą McKenziego na wyniki uzyskane w kwestionariuszu Oswestry*

	BEFORE THE THERAPY		AFTER THE THERAPY	
	N	%	N	%
Minimal level of disability	0	0	23	92
Moderate level of disability	5	20	1	4
Severe level of disability	12	48	1	4
Permanent disability	8	32	0	0
Disablement	0	0	0	0

Table III. *The influence of the treatment applying kinesiotherapy and physical therapy on the Oswestry Disability Index*

Table III. *Wpływ leczenia kinezyterapią i fizykoterapią na wynik testu Oswestry*

	BEFORE THE THERAPY		AFTER THE THERAPY	
	N	%	N	%
Minimal level of disability	0	0	7	28
Moderate level of disability	1	4	16	64
Severe level of disability	14	56	2	8
Permanent disability	8	32	0	0
Disablement	2	8	0	0

Before the therapy in the control group 56% of patients were severely disabled, 32% were permanently disabled and 4% were moderately disabled, according to the Oswestry Disability Index. After the therapy, 64% of patients were moderately disabled, 28% were minimally disabled and 8% were severely disabled.

Table IV. *Basic descriptive statistics for the evaluation of the results of the Oswestry Disability Index in the treatment group*

Tabela IV. *Podstawowe statystyki opisowe dla oceny wyników kwestionariusza Oswestry dla grupy badawczej*

	Mean	N	Standard deviation	The standard error of the mean	Minimum	Maximum
ODI before the therapy	54.960	25	12.677	2.535	32.000	78.000
ODI after the therapy	10.800	25	9.713	1.943	0.000	46.000

The table above includes basic descriptive statistics for the evaluation of the results of the Oswestry Disability Index in the treatment group. The mean value obtained before the therapy is 54.96 (± 12.677), whereas after the therapy it is 10.800 (± 9.713). The minimal value before the therapy was 32 and after the therapy it was 0, whereas the maximal value before was 78 and after - 46. An intra-group T-test for dependant samples showed that the means in both treatment and control groups are significantly different ($p < 0.05$).

Table V. *Basic descriptive statistics for the evaluation of the results of the Oswestry Disability Index in the control group*

Tabela V. *Podstawowe statystyki opisowe dla oceny wyników kwestionariusza Oswestry dla grupy kontrolnej*

	Mean		Standard deviation	The standard error of the mean	Minimum	Maximum
ODI before the therapy	59.600	5	13.626	2.725	36.000	90.000
ODI after the therapy	26.560	5	12.800	2.560	2.000	52.000

The table above includes basic descriptive statistics for the evaluation of the results of the Oswestry Disability Index in the control group. The mean value in the Oswestry Disability Index obtained before the therapy is 59.600 (± 13.626), whereas after the therapy it is 26.560 (± 12.800). The minimal value before the therapy was 36 and after the therapy it was 2, whereas the maximal value before was 90 and after - 52. An intra-group T-test for dependant samples for the control group, similarly to the treatment group, proved significant differences before and after the therapy ($p < 0.05$).

Table VI. *Levene's test for homogeneity of variance and t-test for equality of means assessing the Oswestry Disability Index before and after the therapy for both groups*

Tabela VI. *Test Levene'a jednorodności wariancji i Test t równości średnich dla obu grup oceniający ODI przed i po terapii*

	Levene's test for homogeneity of variance		T-test for equality of means		
	F	Significance	t	df	Significance (bilateral)
ODI before the therapy	0.324	0.572	-1.247	48.000	0.219
ODI after the therapy	2.742	0.104	-4.904	48.000	0.000

The values received from the Oswestry Disability Index before the therapy in treatment and control group do not differ significantly. The case is not the same as far as the evaluation of the ODI values is concerned.

T-test showed that the differences between the means are statistically significant at $p < 0.05$. Thus, it can be inferred that the ODI values after the therapy in treatment and control groups are different - patients from the treatment group obtained significantly lower

ODI result than those from the control group. Therefore, it may be claimed that the McKenzie method has a significant influence on the improvement of the quality of life of patients with lumbosacral spine ailments.

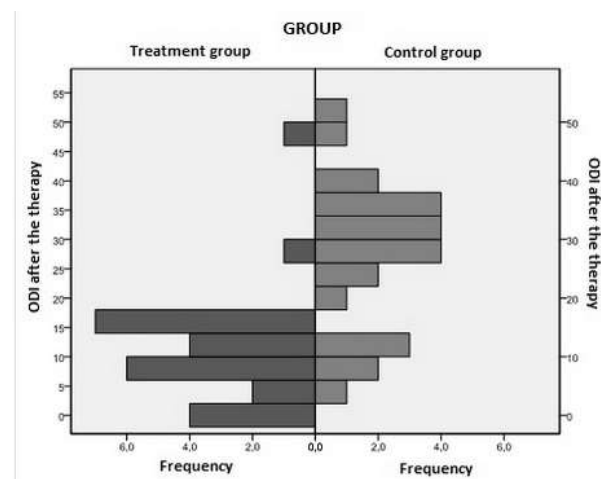


Fig. 1. *Histogram of the distribution of frequency and ODI after the therapy in both groups*

Ryc. 1. *Histogram rozkładu częstości i ODI po terapii po leczeniu dla obu grup*

The ODI result was lower than 20 in almost all patients from the treatment group but the majority of patients from the control group obtained the result between 20 and 40.

DISCUSSION

Own studies revealed that the application of the McKenzie method has a significant influence ($p < 0.05$) on the improvement of the quality of life of patients with lumbosacral spine ailments. Nitera et al. [2] and Garcia et al. [13] obtained very similar results.

As far as own studies are concerned, the McKenzie method is a more effective form of therapy when it comes to the improvement of the quality of life of patients with lumbosacral spine ailments than kinesiotherapy and physical therapy. Even though, when applied exclusively, the McKenzie method gives positive results in the improvement of the quality of life, it can be supplemented by other forms of therapy which leads to the creation of even a more effective treatment tool. It is proved by the work of Olczak and Kuliński [14] entitled *Assessment of application methods: McKenzie and PNF in lumbar disc herniation*. The study was conducted on 170 patients divided into treatment group (90 persons) and control

group (80 persons). The treatment group was treated with the McKenzie method together with the PNF method. The control group was treated only with the McKenzie method. The results of the experiment proved that the therapy applying the McKenzie method supplemented by the PNF method was more effective than the therapy applying only the McKenzie method. Alleviation of ailments, improvement of mobility range, muscular strength and quality of life were all observed earlier in the treatment group.

CONCLUSIONS

1. The McKenzie method therapy significantly improves the quality of life of patients with lumbosacral spine ailments.

2. The McKenzie method therapy is a more effective form of therapy when it comes to the improvement of the quality of patients' life with lumbosacral spine ailments than kinesiotherapy and physical therapy.

REFERENCES

1. Dziak A.: Bóle i dysfunkcje kręgosłupa. Medicina Sportiva, Kraków 2007.
2. Nitera-Kowalik A., Smyda A., Małkowska K., Mężyńska E., Szybalska B.: Wykorzystanie metody McKenziego w kompleksowym usprawnianiu pacjentów z zespołem bólowym dolnego odcinka kręgosłupa w 21 WSzUR w Busku- Zdroju. Kwartalnik Ortopedyczny 2009, 2, 172-177.
3. Lisiński P., Małgowska M.: Jakość życia a zespół bólowy kręgosłupa na tle przeciążeniowym. Chirurgia Narządów Ruchu i Ortopedia Polska 2005, 70(5), 361-365.
4. Kochman D.: Jakość życia. Analiza teoretyczna. Zdrow. Publiczne 2007, 117, 242-248.
5. Lewandowska J., Golec E., Masłoń A., Cieślak B., Chrzanowski R.: Ocena charakteru dolegliwości bólowych kręgosłupa lędźwiowo-krzyżowego u chorych z przepukliną krążka międzykręgowego. Kwartalnik Ortopedyczny 2008, 4, 397-411.
6. Machado L.A.C., Kamper S.J., Herbert R.D., Maher C.G., McAuley J.H.: Analgesis effects of treatments for non-specific low back pain: a meta-analysis of placebo-controlled randomized trials. Rheumatology 2009, 48: 520-527.
7. Wiśniewska T., Kowalski I., Wiśniewska M.: Wpływ autoterapii na efektywność leczenia zespołów bólowych kręgosłupa. Fizjoterapia Polska 2006, 6(2), 138-142.
8. Babula G., Nagraba L., Stolarczyk A., Mitek T.: Analiza skuteczności metody McKenzie u pacjentów z bólem dolnego odcinka kręgosłupa na podstawie literatury. Artroskopia i Chirurgia Stawów 2010, 6(1), 34-44.
9. Rucińska M.: Zastosowanie metody McKenziego w zespołach bólowych dolnego odcinka kręgosłupa. Valetudinaria- Postępy Medycyny Klinicznej i Wojskowej 2009, 2(14), 41-45.
10. Stengert T.: Diagnostyka i leczenie zespołów bólowych kręgosłupa i kończyn metodą McKenziego. Praktyczna Fizjoterapia&Rehabilitacja 2010, 1, 42-45.
11. Stengert T., Milanowska K.: Biomechaniczna diagnostyka funkcjonalna metodą McKenziego. Postępy Rehabilitacji 1998, tom XII, 59-65.
12. Kiwerski J.: Przyczyny zespołów bólowych kręgosłupa. Postępy Rehabilitacji 2000, tom XIV, 41-44.
13. Garcia AN., Gondo FL., Costa RA., Cyrillo FN., Costa LO.: Effects of two physical therapy interventions in patients with chronic non-specific low back pain: feasibility of a randomized controlled trial. Rev Bras Fisioter. 2011, Sep-Oct;15(5): 420-7.
14. Olczak A., Kukliński W.: Ocena zastosowania metod: McKenzie i PNF w dyskopatii lędźwiowej. Acta Balneologica 2010, 175-182.

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